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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TSAI, HENRY	

ART UNIT	PAPER NUMBER
2181	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/816,796	MCKENNEY, PAUL E.	
	Examiner	Art Unit	
	Henry W.H. Tsai	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *1/13/06* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Appeal Brief

1. In view of the Supplemental Appeal Brief filed on 1/17/06, PROSECUTION IS HEREBY REOPENED. The Office Action with the new ground(s) of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement

thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-12, 17-19, 21, 22, 24, and 25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims to computer-related inventions that are clearly nonstatutory fall into the same general categories as nonstatutory claims in other arts, namely natural phenomena such as magnetism, and abstract ideas or laws of nature which constitute "descriptive material. "Abstract ideas, Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759, or the mere manipulation of abstract ideas, Schrader, 22 F.3d at 292-93, 30 USPQ2d at 1457-58, are not patentable. Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data (See MPEP section 2106, IV, B, 1).

Claim 1 comprises steps of allowing, indicating, and forcing. They are just an abstract idea. The claim does not provide practical application that produces a useful, tangible and concrete result. Therefore, this claim is non-statutory. Similar problems exist in claims 2-11.

Claims 12 and 22 mainly comprises instructions which are software per se. The instructions are not described as stored in a computer readable medium to function with a computer to effect a practical application that results in a useful, tangible and concrete result. Therefore, the claims are non-

statutory. Similar problems exist in claims 17-19, 21, 24, and 25.

Claim Rejections - 35 USC § 112

4. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 3, it is not clear who to define "a new element" since there's no old element mentioned previously which can be used for comparison. For examination, it is interpreted such as an element saving a new value. Similar problems exist in claim 12, line 7, and claim 22, line 6.

Applicant is required to review the claims and correct all language which does not comply with 35 U.S.C. § 112, second paragraph.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Robertson (U.S. Patent No. 5,850,632), hereafter referred to as Robertson'632.

Referring to claims 1 and 12, Robertson'632 discloses as claimed a method for maximizing CPU performance in a multiprocessor (see Fig. 2), comprising:

allowing write operations in local memory (each of the instruction caches 21, 26, 31, and 36, see Fig. 2, is broadly interpreted as a local memory) to execute in an arbitrary order (see col. 16, lines 31-34, regarding the caches being fully associative. Note each of the instruction caches 21, 26, 31, and 36, see Fig. 2, is individually and locally used by the associated processors 71-74, see Fig. 2; and a full associative replacement algorithm is used to have an arbitrary order to replace the cache lines thereof) and at any time prior to

storing a pointer (PC, program counter) to a new element of a shared resource (Program counter register in the Robertson'632's system) (note PC will be incremented or changed to a new number after the write operation; and when the program counter register saves a new PC value, it is interpreted as a new element); explicitly indicating a set of write operations to non-local memory (memory configuration cache 305, see Fig. 5, is broadly interpreted as a non-local memory since it is not disposed inside the processors 71-74, see Fig. 2) be conducted in a specified order (see col. 31, lines 38-57, regarding the specified order for writing (replacing) the cache lines of the memory configuration cache 305); and forcing said write operation to non-local memory (memory configuration cache 305, see Fig. 2, is broadly interpreted as a non-local memory since it is not disposed inside the processors 71-74, see Fig. 2) to precede storing said pointer to said new element of said shared resource (note the forcing step occurs when the Robertson'632's system also has a memory access (write operations) to memory configuration cache 305).

As to claims 2, 13, and 23, Robertson'632 also discloses: assigning first and second registers of a CPU for storing associated first and second instruction addresses (note the Robertson'632's processor certainly comprises registers such as

PC (program counter), MAR (memory address register), General Data/Address Registers, or CAR (control address register for storing instruction addresses).

As to claim 3, Robertson'632 also discloses: providing a third instruction referencing said registers (this is the situation when the registers, such as PC (program counter), MAR (memory address register), General Data/Address Registers, or CAR (control address register) storing the first and second instruction addresses is referred to as the source or destination registers in a third instruction).

As to claims 4 and 14, Robertson'632 also discloses: said third instruction specifies ordering between said first and second instructions (this is the situation when the registers storing the first and second instruction addresses are referred to as the destination registers in a third LOAD instruction, therefore, certainly operating the ordering between said first and second instructions).

As to claims 5 and 15, Robertson'632 also discloses: said third instruction indicates said first instruction's execution attaining a first specified state of execution prior to said second instruction's execution attaining a second specified state of execution (note this occurs in the Robertson'632's system when either one of the first instruction and the second

instruction depends from the other and each instruction's execution invokes its state of execution specified by such as its opcode).

As to claims 6 and 16, Robertson'632 also discloses: said first and said second specified states of execution are selected from the group consisting of: committing instruction execution, initiating memory access, completing a memory access, initiating an I/O access, completing an I/O access, and completing instruction execution (note this occurs in the Robertson'632's system when the first instruction and the second instruction is a memory load/store operation and it therefore certainly involves at least one of initiating memory access, completing a memory access as claimed).

As to claims 7, 17, and 24, Robertson'632 also discloses: assigning a sequence number to an associated instruction for maintaining instruction ordering (note this is the situation in the Robertson'632's system when a sequence of program to be executed is saved in the Robertson'632's main memory and each instruction in the program is assigned by a logical address or physical address number)

As to claims 8 and 18, Robertson'632 also discloses: statically encoding said sequence number within said instruction (inherently existing in the Robertson'632's processor when a

sequence of program is therein).

As to claims 9 and 19, Robertson'632 also discloses: dynamically encoding said sequence number within said instruction (as set forth above, inherently the Robertson'632's processor comprises registers such as MAR (memory address register), General Data/Address Registers, or CAR (control address register for storing instruction addresses and for dynamically encoding the sequence number).

As to claims 10 and 20, Robertson'632 also discloses: placing a range of instructions into a hierarchical ordering system (note the control unit of the Robertson'632's CPU is reasonably and broadly interpreted as a hierarchical ordering system and a range of instructions is inherently placed in a process table).

As to claims 11, 21 and 25, Robertson'632 also discloses: implementing a special instruction for maintaining a hierarchical execution of said instruction (such as a microinstruction, existing in the Robertson'632's processor for control the instruction execution, which is broadly interpreted as a special instruction for maintaining a hierarchical execution).

Referring to claim 22, Robertson'632 discloses as claimed a processor for use in a multiprocessor computer system (see Fig.

2), comprising: a first instruction for allowing write operations in local memory (each of the instruction caches 21, 26, 31, and 36, see Fig. 2, is broadly interpreted as a local memory) to occur in an arbitrary order (see col. 16, lines 31-34, regarding the caches being fully associative. Note each of the instruction caches 21, 26, 31, and 36, see Fig. 2, is individually and locally used by the associated processors 71-74, see Fig. 2; and a full associative replacement algorithm is used to have an arbitrary order to replace the cache lines thereof), a second instruction for explicitly indicating a set of write operations to non-local memory (memory configuration cache 305, see Fig. 2, is broadly interpreted as a non-local memory since it is not inside the processors 71-74, see Fig. 2) to be conducted in a specified order (see col. 31, lines 38-57, regarding the specified order for writing (replacing) the cache lines of the memory configuration cache 305), wherein write operations to non-local memory must execute prior to storage of a pointer (PC, program counter) to a new element of a shared resource (Program counter register in the Robertson'632's system) (note PC will be incremented or changed to a new number after the write operation); and a third instruction for managing order of execution of said first and second instructions (note the above limitations are disclosed by Robertson'632 as set

forth above in claim 4); wherein execution of said second instruction is responsive to said first instruction reaching a specified state of execution and said specified state of execution is selected from the group consisting of: committing instruction execution, initiating memory access, completing a memory access, initiating an I/O access, completing an 1/0 access, and completing instruction execution (note the above limitations are disclosed by Robertson'632 as set forth above in claims 5 and 6).

Response to Arguments

7. Applicant's arguments filed 1/17/06 have been fully considered but they are not deemed to be persuasive.

Applicants argue that "Robertson does not expressly or inherently describe storing a pointer, or an equivalent thereof, to a new element of a shared resource. Applicant's claimed invention requires the use of the shared resource for storage of the pointer while Robertson does not utilize a shared resource for storage of a pointer or even a value of the program counter." (page 6, lines 3-6). Examiner disagrees with Applicants. As set forth above, Robertson'632 discloses:

storing a pointer (PC, program counter) to a new element of a shared resource (Program counter register in the Robertson'632's system) (note PC will be incremented or changed to a new number after the write operation; and when the program counter register saves a new PC value, it is interpreted as a new element); explicitly indicating a set of write operations to non-local memory (memory configuration cache 305, see Fig. 2, is broadly interpreted as a non-local memory since it is not disposed inside the processors 71-74, see Fig. 2) be conducted in a specified order (see col. 31, lines 38-57, regarding the specified order for writing (replacing) the cache lines of the memory configuration cache 305).

Applicants further argue that "Examiner's equivocation, would again require Robertson to store the program counter in the memory configuration cache as the shared resource. However, as noted above, Robertson cannot store a program counter in the memory configuration cache. Accordingly, Robertson does not force a write operation in the manner as claimed by Applicant." (page 6, lines 13-16). Examiner disagrees with Applicants. Robertson's reference is not interpreted as storing a program counter in the memory configuration cache. The program counter is stored in the program counter register in the Robertson'632's

system. The Robertson'632's memory configuration cache is a non-local memory instead of shared resource as indicated in the art rejection above.

Applicants further argue that "However, there is no force operation associated with the act of storing a pointer to a new element of a shared resource in Robertson, either express or inherent, since Robertson does not store a program counter in the memory configuration cache." (page 7, lines 4-7). Examiner disagrees with Applicants. As set forth in the art rejection, Robertson'632 discloses, as claimed, forcing said write operation to non-local memory (memory configuration cache 305, see Fig. 5, is broadly interpreted as a non-local memory since it is not disposed inside the processors 71-74, see Fig. 2) to precede storing said pointer to said new element of said shared resource (note the forcing step occurs when the Robertson'632's system also has a memory access (write operations) to memory configuration cache 305).

Applicants further argue that "Robertson does not store a program counter to an element of a shared resource in the memory configuration cache." (page 10, line 1; page 11, lines 1-2). Examiner disagrees with Applicants. As set forth in the art rejection, Robertson'632 discloses, as claimed, storing a

pointer (PC, program counter) to an element of a shared resource (Program counter register in the Robertson'632's system). Again, the Robertson'632's memory configuration cache is a non-local memory instead of shared resource as indicated in the art rejection above.

In summary, Robertson'632 teaches the claimed invention.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Henry Tsai whose telephone number is (571) 272-4176. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner supervisor, Fritz M. Fleming, can be reached on (571) 272-4145. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to **the TC central telephone number, 571-272-2100**.

9. In order to reduce pendency and avoid potential delays, Group 2100 is encouraging FAXing of responses to Office actions directly into **the Group at fax number: 571-273-8300.** This

practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2100 will be promptly forward to the examiner.

HENRY W. H. TSAI
PRIMARY EXAMINER

March 20, 2006